REMARKS

Claims 17-31 and 33-46 remain in this application, with Claim 17 amended and Claims 1-16 and 32 previously canceled. Applicants respectfully request reconsideration and review of the application in view of the foregoing amendments and following remarks.

As discussed in Applicants' previous response, the invention relates to the control of a model train operating on a track using a combination of known control protocols. Under conventional control protocol, an operator manually varies the track voltage by turning a knob on a variable output transformer. The model train detects the voltage changes and controls its speed in accordance with the detected voltage changes. More recently, command and control protocols such as the TRAINMASTER protocol have been adopted that enable an operator to enter commands (such as speed selection) into a remote control device. These command are converted into digital commands that are then communicated to the model train via the track, such as using radio frequency modulation. These command and control protocols enable much greater control over the model train and accessories than was ever possible using the conventional control protocol. But, even though the more modern control protocols have advantages in terms of the greater range of control over the model train and accessories, some model railroad enthusiasts still prefer to control the train speed the "old-fashioned" way, i.e., by turning the knob on the variable output transformer. However, model trains designed to receive modulated digital commands are incapable of interpreting the variable voltage as a speed control signal.

The invention provides an interface between the variable output transformer and the more recent vintage model trains. Specifically, the user can manually operate a variable output transformer to vary the track voltage in the conventional manner. Unlike the prior art, the control system detects the variations in voltage produced by the

variable output transformer, and converts these voltage changes into digital control signals that are then communicated to the train via the track. Thus, the user can use the variable output transformer to make manual throttle adjustments in accordance with the conventional control protocol in order to control the speed of model trains configured to respond to digital command signals (such as using the TRAINMASTER protocol). None of the prior art references of record suggest or disclose this capability.

The Examiner rejected Claims 17-31 and 33-46 under 35 U.S.C. § 103(a) as unpatentable over Young et al. (U.S. Patent No. 5,749,547) in view of Young et al. (U.S. Patent No. 5,251,856). These rejections are respectfully traversed.

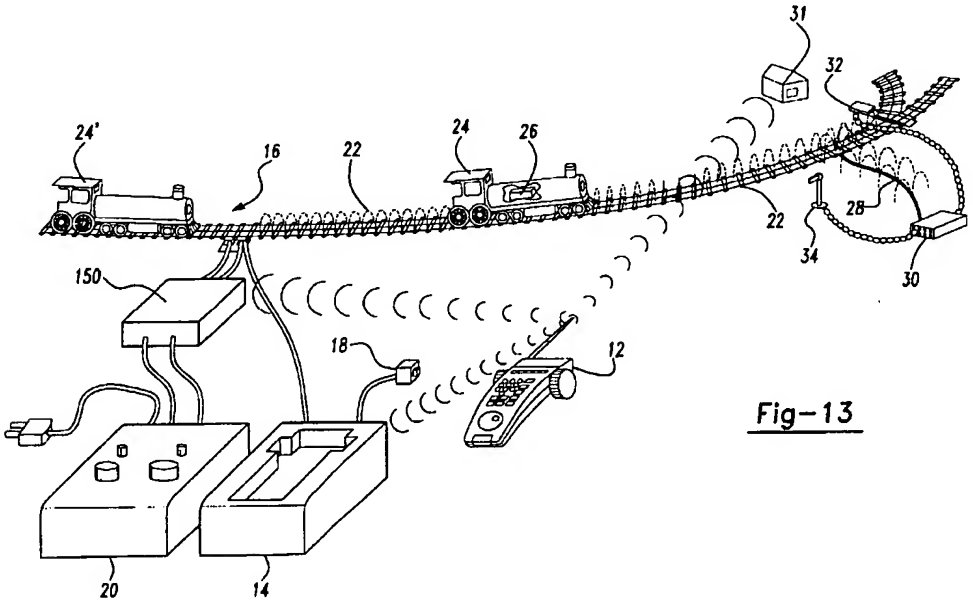


Fig-13

Young et al. '547 discloses an apparatus and method for control of model trains using a remote control unit. Referring to Fig. 13 (above), the remote control unit 12 has a keypad and dial that can be operated by a user to control train functions and speed. A transformer 20 is connected to the track and applies power to the track through a power master unit 150. The remote control unit 12 transmits a wireless command

signal to both the base unit 14 and to the power master unit 150. The base unit 14 is coupled to the track and communicates RF command signals to the track for controlling train functions. The power master unit 150 can also be used to superimpose DC control signals onto the AC power signals in order to control train functions and speed.

In other words, Young et al. '547 enables a remote control unit 12 to command model trains in either of two ways: (1) by communicating RF command signals to model trains equipped to receive and decode RF command signals, and (2) by superimposing DC control signals onto the power signals applied to the track to model trains equipped to receive and decode superimposed DC control signals. Nevertheless, Young et al. '547 does not enable control over a model train in the same manner as the present invention. Specifically, Young et al. '547 does not allow varying voltage signals applied to the track to be converted and retransmitted as RF command signals to model trains equipped to receive RF command signals. Hence, Young et al. '547 enables a modern protocol controller to communicate with a conventional protocol train, *but does not enable a conventional protocol controller (i.e., variable output transformer) to communicate with a modern protocol train.* This is a significant improvement in the art that is not suggested or disclosed by Young et al. '547.

Young et al. '856 discloses a control circuit for a model train that is backward compatible with a conventional E-Unit used to detect power interruptions signifying a change in direction. Conventional model train systems use a temporary interruption of AC power on the rails to indicate a desire by the user to reverse direction of the train. The E-Unit is a solenoid device carried by the model train that changes state when a power interruption is detected. The state change of the E-Unit reverses the direction of power applied to the locomotive engine, thereby enabling control over a reversal of direction. Young et al. '856 discloses an override connection to the E-Unit controller

that enables remote control using digitally coded signals as well as backward compatibility with systems that use interruption of power to control the E-Unit. But, Young et al. '856 fails to disclose any control device or method that detects changes in DC level and converts these DC level changes to signals in another protocol.

The Examiner responded to Applicants' arguments by stating that "the prior art of Young et al (547) and Young et al (856) both describe a protocol used to control the model trains." While this is a true statement, it completely misses the point of the present invention. The patent application does not simply describe a protocol--it provides a system that converts from one protocol to another to provide a level of interoperability that had not been achieved previously. The prior art does not suggest or disclose this ability.

More particularly, the proposed combination of references fails to suggest or disclose all of the claim limitations. With respect to independent Claim 17, the proposed combination of references fails to suggest or disclose, *inter alia*, "a voltage sensor coupled to the block of track to sense the voltage provided thereon by the transformer," and "a controller connected to said selection devices, the controller configured to determine the desired speed of the model train from an input provided by the voltage sensor." The Examiner acknowledged that Young et al. '547 fails to disclose a voltage sensor to determine the voltage from the transformer or a controller to determine the speed responsive to the sensor.

To make up for these deficiencies, the Examiner proposes the combination with Young et al. '586. Specifically, the Examiner asserts that voltage sensors U1A and U1B monitor the voltage provided to the train, and that it would be obvious to have these sensors monitor the speed of the train. Applicants respectfully disagree. The sensors U1A and U1B are arranged on the locomotive to detect respectively the voltage and current from the track and sense an interruption of the voltage, which signifies a

command to the train to change directions. The reference contains no teaching or suggestion of any way to use these sensors to monitor the speed of the train. The Examiner states that the use of these sensors would enable the system "to better monitor the speed of the train and to better convey command messages to the vehicle without causing damage to the system or the vehicles." Applicants cannot find this "motivation" to combine the references anywhere in the references. Regardless, the statement seems generally unrelated to the invention insofar as the invention is not directed to improving the monitoring of train speed or the conveying of messages. To the contrary, the invention is directed to enabling a conventional protocol controller (i.e., variable output transformer) to communicate with a modern protocol train, which is not suggested or disclosed by the proposed combination of references.

Moreover, the proposed combination of references further fail to suggest or disclose "a transmitter electrically connected between the output of said controller and said track, and operative to generate digital messages corresponding to said selection devices and the desired model train speed, and further operative to inject said digital messages onto said track," as defined in Claim 17. As discussed above, neither Young et al. '856 nor Young et al. '547 disclose any way to detect a voltage applied to the track and convert those signals into another protocol format for communication back onto the track.

Likewise, with respect to independent Claim 27, the proposed combination of references fails to suggest or disclose, *inter alia*, "detecting an AC waveform supplied to a block of track upon which said model train travels, the AC waveform having a user selectable amplitude corresponding to a desired speed setting of the model train; establishing a first reference point of said waveform; sampling said AC waveform at a sampling point occurring after a pre-determined offset time interval following said reference point to obtain a sampled voltage level; determining the desired speed setting

corresponding to said sampled voltage; and sending a speed control message to said model train identifying the desired speed setting." As discussed above, neither Young et al. '856 nor Young et al. '547 disclose any way to detect the desired speed setting by sampling the voltage applied to the track, and to send a speed control message to the model train identifying the desired speed setting. The Examiner has not made a sufficient showing that these limitations are suggested or disclosed by the references.

With respect to independent Claim 33, the proposed combination of references fails to suggest or disclose, *inter alia*, "a voltage sensor in communication with the controller, the voltage sensor disposed to sense a model track voltage, wherein the controller further determines a commanded train speed responsive to an input from the voltage sensor." As discussed above, neither Young et al. '856 nor Young et al. '547 disclose any way to detect the desired speed setting by sensing the voltage applied to the track. The Examiner has not made a sufficient showing that these limitations are suggested or disclosed by the references.

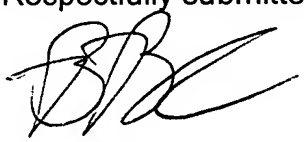
With respect to independent Claim 43, the proposed combination of references fails to suggest or disclose, *inter alia*, "receiving an input voltage at the voltage input; determining a commanded train speed based on the input voltage; generating a speed command according to a command protocol, wherein the command protocol comprises a protocol selected from a digital command protocol and a DC-offset command protocol; and sending the speed command to the model train via the track using the command output." As discussed above, neither Young et al. '856 nor Young et al. '547 disclose any way to determine the commanded train speed based on the input voltage and to then communicate a speed command to the train according to a selected command protocol. The Examiner has not made a sufficient showing that these limitations are suggested or disclosed by the references.

In view of the foregoing, the Examiner failed to make a *prima facie* case of obviousness. The rejection of Claims 17-31 and 33-46 should be withdrawn.

Accordingly, Applicants respectfully submit that Claims 17-31 and 33-46 are in condition for allowance. Reconsideration and withdrawal of the rejections is respectfully requested, and a timely Notice of Allowability is solicited. If it would be helpful to placing this application in condition for allowance, Applicants encourage the Examiner to contact the undersigned counsel and conduct a telephonic interview.

To the extent necessary, Applicants petition the Commissioner for a three-month extension of time, extending to August 8, 2006, the period for response to the Office Action dated February 8, 2006. A check in the amount of $510.00 is enclosed for the three-month extension of time pursuant to 37 CFR §1.17(a)(3). The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-0639.

Respectfully submitted,



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